DOCUMENT RESUME

ED 441 826 TM 030 861

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TITLE Stress and Stress Relief in the Educational Research Classroom.
PUB DATE 2000-04-00
NOTE 8p.; Paper presented at the Annual Meeting of the American Educational Research Association (New Orleans, LA, April 24-28, 2000).
PUB TYPE Reports - Research (143) -- Speeches/Meeting Papers (150)
EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Anxiety; *Educational Research; *Graduate Students; Graduate Study; Higher Education; Stress Management; *Stress Variables; *Student Attitudes

ABSTRACT

Factors that increase stress and those that decrease stress were studied with 33 graduate students in an introductory educational research course. Participants completed the Statistical Anxiety Rating Scale (STARS) (R. Cruse, R. Cash, and D. Bolton, 1985) and were asked to rate their anxiety daily during the 4 weeks of the class. The instructor's recognition of anxiety, the instructor's use of humor, and the ability to work with a partner or group were seen by students as anxiety reduction factors. Reducing fear of evaluation was more difficult; students were highly anxious even with an open-book/open-note test. Other situations that increased stress were being unfamiliar with the tools and materials of statistics, having to make a presentation in front of peers, and being given assignments that differed from those required in other courses. Personal and family concerns and the amount of work required in other classes added to the strain of taking the educational research class. (SLD)

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ED 441 826

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Stress and Stress Relief in the Educational Research Classroom

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Paper presented at the
Annual Meeting of the American Educational Research Association,
New Orleans, April 24-28, 2000

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Mathematics anxiety has been described as "panic, helplessness, paralysis, and mental disorganization that arises among some people when they are required to solve a mathematics problem" (Hunt, 1985, p. 32). This fear of mathematics generalizes to statistics and causes students in statistics classes and educational research classes, which often include the study of elementary applied statistics, to experience feelings of anxiety and incompetence. Sometimes students drop out of such courses, curtailing their career advancement (Richardson & Suinn, 1972); sometimes they just labor through the course, making it a high-anxiety arena for their classmates and instructors (Wilson, 1999).

Many researchers have suggested ways to alleviate anxiety, including addressing the anxiety (Tobias, 1978 and 1991; Hunt, 1985), using humor (Schacht & Stewart, 1990), reducing fear of evaluation (Hunt, 1985; Kosbab, 1989), and encouraging students to work in cooperative groups (Mealey & Host, 1992). Wilson (1999) found that students perceive specific teaching behaviors and the interpersonal style of the instructor as being helpful in reducing stress in the educational research classroom. Effective teaching behaviors include giving individual help, expressing concern about anxiety, breaking the material into small steps, using humor, and giving the students activities that help explain and clarify statistics concepts. Interpersonal factors include having a positive attitude and being encouraging, reassuring, supportive, and calm.

Although much has been written about anxiety *reduction*, little research, other than that on test anxiety, has addressed what happens in the mathematics, statistics, or educational research classroom to *increase* anxiety, as perceived by students. The purpose of this study was to explore both sides of this phenomenon: What are the things that increase stress and what are

the things that decrease stress, as reported by students in the graduate educational research classroom?

In this study, 33 graduate students enrolled in an introductory educational research course in a master's program in a small southeastern Ohio college were administered the Statistical Anxiety Rating Scale (STARS). Mean anxiety scores were above the normative scores, as reported by Cruise, Cash, and Bolton (1985), for the total battery and for all six factors (worth of statistics, interpretation anxiety, computation self-concept, test and class anxiety, fear of asking for help, and fear of the statistics teacher).

During the four weeks of the class, which met four times a week for three-hour sessions, students were asked to complete a daily journal entry in which they rated their anxiety on a scale of 1 ("Not anxious at all") to 10 (Stressed out") and three prompts: "Today, in general, I'm feeling...," "These things made me *more* anxious today...," and "These things made me *less* anxious today." On the final day of the course, students complete a Likert-scale questionnaire that was developed from those factors emerging from the journals. Students rated from "Not at all" to "A great deal" 17 possible factors in increasing anxiety and 21 possible factors in decreasing anxiety.

Data analysis included finding the mean anxiety rating for each day and comparing it to the activities that were going on in the classroom, calculating and ranking mean scores for the factors outlined on the questionnaire, and analyzing journal entries for patterns and themes.

Mean anxiety ratings for the 13 days in which data was collected were as follows: 5.24, 4.15, 5.09, 4.73, 5.82, 5.00, 3.88, 4.28, 6.19, 3.41, 3.11, 3.29, and 3.78. Interesting to note are that the mean anxiety rating fell after the first day, rose markedly on the day before the single

test (Day 5), and rose even higher on the day that students were introduced to *t*-test concepts and their computation using SPSS 8.0 for Windows (Day 9). Also interesting is that high stress days were immediately followed by low stress days. The class ended in a series of reasonably low stress days.

A preliminary analysis of the journal entries supports the numerical rankings. On the first day of class, students reported being "anxious," "confused," "stressed," "nervous," and "overwhelmed." Only one was "pretty comfortable," and one was even "looking forward to beginning this research." On the second day of class, almost half reported feeling "better than yesterday," "more relaxed," and "fine" or "good." On the day before the test, students reported feeling "overwhelmed," "having too much to do," and "more and more stressed," unnerved," and "brain-fried." After the test, they were "tired," "beat," and "worn out," but also "relieved." The introduction of *t*-tests resulted in more than half reporting feeling "pretty stressed," "anxious," "overwhelmed," and "ready to cry." The following day, nearly all were relieved, reporting feeling "good," "great," and even "super." Over the last few days, many reported feeling "happy," "great," "relaxed," and overwhelmingly "glad that things are almost over."

Analysis of the questionnaire shows that several factors increased anxiety. At the top of the rankings were the following: doing computer assignments in the lab, difficulty of material covered in this class, amount of work in other classes, taking the test, presenting a group research project, preparing an individual research proposal, and personal or family problems. Of the factors that reduced anxiety, the following were ranked highest: instructor's encouragement, getting a good grade on an assignment, instructor's reputation, instructor's use of humor in the classroom, knowing professor is sympathetic to personal/family priorities, instructor's

recognition of anxiety of students, completing an assignment, and working with a partner in the computer lab.

The results of this study appear to offer some support for at least three of the strategies purported in the literature to alleviate anxiety. Instructor's recognition of anxiety, instructor's use of humor, and ability to work with a partner or group were seen as anxiety reduction factors by students. Reducing fear of evaluation seems to be more difficult. Even with an open book/open note test and the opportunity to raise test grades with subsequent instruction and completion of similar problems, students were highly anxious. Interpersonal factors as stress reducers, especially encouragement by the instructor, supports earlier work by the author (Wilson, 1999).

In addition to the known stressors of testing and evaluation, this study shows that being unfamiliar with the material and tools of statistics, including computer software, having to make a presentation in front of peers, and competing assignments different from those required in other classrooms (research proposals and critiques of research articles) also increase stress. With these adult students, whose mean age was nearly 35 and most of whom were taking another class, it is not surprising that personal and family concerns and the amount of work required in other classes added to the strain of taking the educational research class.

Although the results of this study have limited generalizability due to the homogeneity of the sample, there may be some implications for educational research professors. First, it is important to note that the encouragement of the instructor appears to be instrumental in the reduction of anxiety in the classroom; second, that acknowledgment of anxiety, use of humor, and cooperative learning also play a role; third, that there are many factors outside the control of the research instructor that increase student anxiety, including personal/family problems and the

amount of work students encounter in other classes; and probably most importantly, that there is a certain amount of anxiety inherent in a class in which students are asked to learn and respond to information, including mathematical procedures, statistical concepts, and research conventions, with which they are unfamiliar.

Resources

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